



Percentages



Percentage of amounts

Non-Calculator Method:

- To find 10% - divide by 10
- To find 1% - divide by 100
- To find 25% - divide by 4
- To find 50% - divide by 2
- To find 75% - divide by 4 (to find 25%) then multiply by 3

These useful percentages can be used to build up any percentage of amount.

Example – Find 42% Of £80

$$10\% = 80 \div 10 = 8$$

$$40\% = 4 \times 10\% = 4 \times 8 = 32$$

$$1\% = 80 \div 100 = 0.8$$

$$2\% = 2 \times 1\% = 2 \times 0.8 = 1.60$$

$$42\% = 40\% + 2\% = 32 + 1.60 = £33.60$$

Have a calculator?
Much easier!

$$80 \times 0.42 = £33.60$$

Change the percentage into its decimal equivalent to easily find the percentage of an amount.

Percentage Multipliers

To increase by a percentage add the increase percentage to 100%, convert to the decimal equivalent and multiply.

For example:

$$\text{Increase } £50 \text{ by } 12\%$$

$$50 \times 112\%$$

$$= 50 \times 1.12$$

$$= £56 \quad (\text{don't forget units})$$

In this example 1.12 is the multiplier

To decrease by a percentage subtract the decrease percentage from 100%, convert to the decimal equivalent and multiply.

For example:

$$\text{Decrease } 85 \text{ kg by } 4\%$$

$$85 \times 96\%$$

$$= 85 \times 0.96$$

$$= 81.6 \text{ kg} \quad (\text{don't forget units})$$

In this example 0.96 is the multiplier

Percentage change

$$\% \text{ change} = \frac{\text{difference}}{\text{original amount}} \times 100$$

Example: A house increased in value from £138,000 to £156,000 over the last five years. What percentage increase is this?

$$\% \text{ increase} = \frac{156000 - 138000}{138000} \times 100$$

$$= 13.04347826$$

$$= 13\% \text{ (2sf)}$$

This formula also works for decreases.

Example: Tracey kept chickens – unfortunately the chickens were traumatised by a fox and their mean average egg production went down from 32 eggs a week to 14 eggs a week. What % reduction in their egg production is this?

$$\% \text{ reduction} = \frac{32 - 14}{32} \times 100$$

$$= 56.25\%$$

Reverse percentage

Think of this as finding the original amount before a % increase or % decrease

Example: A dress was reduced by 80% in a sale and its new price was £34. What was the price before the sale?

Calculator method

$$34 \div 0.2 = £170$$

Divide by the percentage multiplier that would have been used to decrease the original amount.

Non-Calculator Method

After the reduction £34 = 20%

$$\text{Therefore } 1\% = 34 \div 20$$

$$= 1.7$$

The original price would be equal to 100%

$$100\% = 100 \times 1.7$$

$$= £170$$